

## **U.S. EPA Landfill Methane Outreach Program Preliminary Screening Analysis Report for City of Canton Landfill**

A landfill gas generation curve was developed for the City of Canton Landfill in Canton, Mississippi, using several parameters specific to the landfill and defaults from AP-42<sup>1</sup>. These data were entered into the EPA LandGEM<sup>2</sup> software to estimate landfill gas production, beginning with the year after the landfill opened. The values of these model input parameters are provided in Table 1. Landfill-specific data were obtained from an MS Word file attached to an email<sup>3</sup>, which are included in Appendix A. These data include the year the landfill opened, the current amount of waste-in-place, the current annual waste acceptance rate, and the total landfill design capacity. The current waste-in-place amount was used to calculate an average annual waste acceptance rate from the year the landfill opened until 2001. The landfill closure year was calculated by the LandGEM software using the total landfill design capacity and the current annual waste acceptance rate.

Also necessary for the model to run are the following parameters:  $L_0$  (methane generation potential),  $k$  (methane generation rate constant), and the percent volume of methane and carbon dioxide in the landfill gas. Defaults from AP-42 were used for  $L_0$  and  $k$ , and LandGEM software defaults were used for the percent methane and carbon dioxide. The AP-42 default value for  $k$  for non-arid areas was used because several sources indicated an average annual precipitation of greater than 25 inches for the area surrounding the landfill.

Collection of the landfill gas at its estimated extraction rate of 135 scfm in 2002 would be equivalent to any of the following annual environmental benefits for 2002:

**Removing emissions equivalent to 3,000 cars**  
**Planting 4,000 acres of forest**  
**Offsetting the use of 70 railroad cars of coal**  
**Preventing the use of 33,000 barrels of oil**

**Table 1: Model Input Parameters for the City of Canton Landfill**

<b>Model Parameter</b>	<b>Value</b>	<b>Units</b>
Year Landfill Opened	1985	----
Calculated Landfill Closure Year	2010	----
Waste Capacity	673,766	tons
Waste-In-Place (as of 5-24-02)	440,766	tons
1985-2001 Annual Waste Acceptance Rate <sup>a</sup>	25,927	tons/yr
2002 Annual Waste Acceptance Rate	33,000	tons/yr
Methane Generation Rate Constant (k)	0.04	1/yr
Methane Generation Potential (L <sub>o</sub> )	3,203	ft <sup>3</sup> /ton
Percent Methane in Landfill Gas	50	%
Percent Carbon Dioxide in Landfill Gas	50	%

<sup>a</sup> Calculated based on 440,766 tons of waste-in-place over the 17-year period of 1985 to 2001, as provided in Reference 3.

The estimated waste-in-place in tons and landfill gas generation in standard cubic feet per minute (scfm) for a 50-year period are shown in Table 2. Also provided is the estimated amount of landfill gas recovered over time, which was calculated using the assumption of an 85% collection rate. The graph was created using the landfill gas production and recovery data in Table 2. The curves demonstrate the landfill gas generation and recovery rates over time and the straight, vertical line indicates the current year.

**[Insert beneficial-use options paragraph here.]**

These projections have been prepared specifically for the City of Canton Landfill on behalf of the U.S. EPA Landfill Methane Outreach Program (LMOP), and are based on engineering judgement and represent the standard of care that would be exercised by a professional reasonably experienced in the field of landfill gas projections. LMOP and its contractors ERG and EMCON do not guarantee the quantity of available landfill gas, and no other warranty is expressed or implied. No other party is intended as a beneficiary of this work product, its content, or information embedded therein. Third parties use this information at their own risk. LMOP and its contractors ERG and EMCON assume no responsibility for the accuracy of information obtained from, compiled, or provided by other parties.

## References

1. Compilation of Air Pollutant Emission Factors AP-42, Fifth Edition, Volume 1: Stationary Point and Area Sources. Chapter 2: Solid Waste Disposal. Section 2.4.4.1. U.S. EPA. November 1998. <http://www.epa.gov/ttn/chief/ap42/ch02/final/c02s04.pdf>
2. Landfill Gas Emissions Model, version 2.01. U.S. EPA. January 6, 1999. <http://www.epa.gov/ttn/catc/products.html>
3. Email correspondence (with MS Word attachment) from Jimmy Nelson, Allen & Hoshall, to Juene Franklin, EMCON/OWT, Inc. May 24, 2002. Shown in Appendix A.

## **Appendix A**

**E-mail and Attached File Containing Data for the City of Canton Landfill**

From: Jimmy Nelson [<mailto:Jnelson@allenhoshall.com>]  
Sent: Friday, May 24, 2002 10:48 AM  
To: [JKFranklin@TheITGroup.com](mailto:JKFranklin@TheITGroup.com)  
Cc: [coclntl@netdoor.com](mailto:coclntl@netdoor.com)  
Subject: Re: City Of Canton Landfill Statistics

here is the form. Please call me if you have any questions

James C. Nelson, P. E.  
Allen & Hoshall  
Engineers Architects Planners  
P. O. Box 4510  
Jackson, Mississippi 39296  
601-368-7727

<<Canton-prescreening info.doc>>

>>> "Franklin, Juene K" <[JKFranklin@TheITGroup.com](mailto:JKFranklin@TheITGroup.com)> 05/23/02 11:22AM >>>  
Hello Jimmy:

Mike Parker asked me to contact you concerning the statistics on the City of Canton Landfill in Mississippi. I have attached a copy of a form that details the information as we understand it concerning the City of Canton Landfill. Could you please verify and/or correct this data as necessary? Also, could you please provide your phone number, so that I may follow-up this email with a phone call? If you would like to contact me, I can be reached at any of the phone numbers shown below. Thanks in advance for your assistance.

Sincerely,  
Juene Franklin, P.E.  
Client Program Manager  
EMCON/OWT, Inc. (a Shaw Group Company)  
13111 NW Freeway, Suite 600  
Houston, TX 77040  
phone: (713) 996-4581  
mobile: (832) 244-1980  
satellite: (281) 997-8756  
fax: (713) 329-9163  
email: [jkfranklin@theitgroup.com](mailto:jkfranklin@theitgroup.com)

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**LANDFILL PRE-SCREENING INFORMATION FOR  
FEASIBILITY STUDIES/EEUAs**

Exact landfill name:	City of Canton Landfill
EPA landfill ID number:	SW04501B0378
City where landfill is located:	Canton, Mississippi
County where landfill is located:	Madison
Landfill owner name:	City of Canton Mississippi
Landfill mailing/street address, city, state, zip:	303 Soldier Colony Road, Canton, Mississippi 39046
Landfill owner contact person, phone, fax, e-mail:	<a href="mailto:Cocnfl@netdoor.com">Cocnfl@netdoor.com</a> Mike Parker
Landfill owner type (public or private):	Public
Landfill operator (if different from owner):	City of Canton
Landfill operator contact person, phone, fax, e-mail:	Mike Parker 601-859-3245
Year landfill opened:	1985
Year landfill (or individual cells) closed:	1988, 1994, 1996, 2000 (projected closure year of the entire site is 2012)
Landfill area (acres):	70
Waste depth (feet):	Average 30 ft.
Waste in place (tons):	Approximately 440,766 Tons
Total Landfill Design Capacity (tons):	Approximately 673,766
Annual waste acceptance rate (tons/year):	Approximately 33,000
Leachate Disposal Volume (gpd):	Estimated to be Approximately 600 gpd
Leachate Disposal Method (POTW, onsite treatment, etc.)	Publicly Owned Treatment Works located adjacent to the landfill
Landfill subject to NSPS/EG (yes/no):	No
Please provide a brief description of NSPS/EG status:	NA
Describe any development activities to date:	NA
Electric utility servicing the landfill or vicinity:	Yes
Natural gas utility servicing the landfill or vicinity:	Yes
Potential end-users of the LFG within 10 mile radius of landfill (if known):	Nissan Plant
Any other information you believe would be helpful to the LMOP:	